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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/620,988
Filing Date: May 6, 2009
Appellant(s): Ron Everett

Dennis M. Carleton

For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed on May 6, 2009 appealing from the Office action mailed September 12, 2007.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences, which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of claims contained in the brief is incorrect. A correct statement of the status of the claims is as follows:

This appeal involves claims 1-3, 5, 7-9, 11, 13, 15-24, 27-34, 36, 40, 42, 44, 47-62, 82-90 and 92-96. Claims 25, 26, 35, 37, 41, 43, 45, 46, and 91 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and intervening claims.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejections to be Reviewed on Appeal

The appeal brief does not provide a correct statement of the grounds of rejection to be reviewed on appeal.

The grounds of rejection to be reviewed on appeal are as follows:

I. Claims 1, 3, 7, 9, 11, 13, 15, 16, 53, 82-87, 89, and 92 stand rejected under § 35 U.S.C. 103(a) as being unpatentable over white et al., (hereinafter "White", U.S. Patent Number 6609132) in view of Abineri et al., (hereinafter "Abineri", U.S. Patent Application Publication Number 2005/0044079) and further in view of Plourde JR et al., (hereinafter "Plourde", U.S. Patent Application Publication Number 2003/0110513).

II. Claim 2 stands rejected under § 35 U.S.C. 103(a) as being unpatentable over White in view of Abineri and further in view of Plourde and further in view of Berk (U.S. Patent Application Publication Number 2002/0069240).

III Claims 5, 8, 18-24, 31-34, 36, 47-48, 50-52, 54-60, 62, 88, 90, and 93 stand rejected under § 35 U.S.C. 103(a) as being unpatentable over White in view of Abineri and further in view of Plourde and further in view of Kroenke et al., (hereinafter "Kroenke", U.S. Patent Number 5809297).

IV. Claims 27-30 stand rejected under § 35 U.S.C. 103(a) as being unpatentable over White in view of Abineri and further in view of Plourde and further in

view of Kroenke and further in view of Walker et al., (hereinafter “Walker”, U.S. Patent Application Publication Number 2003/0216169).

V. Claim 40 stands rejected under § 35 U.S.C. 103(a) as being unpatentable over White in view of Abineri and further in view of Plourde and further in view of Bielak et al., (hereinafter "Bielak", U.S. Patent Number 5873049).

VI. Claim 42 stands rejected under § 35 U.S.C. 103(a) as being unpatentable over White in view of Abineri and further in view of Plourde and further in view of Eversole et al., (hereinafter "Eversole", U.S. Patent Application Publication Number 2003/0076978).

VII. Claim 44 stands rejected under § 35 U.S.C. 103(a) as being unpatentable over White in view of Abineri and further in view of Plourde and further in view of Shwartz et al., (hereinafter "Shwartz", U.S. Patent Number 5812840).

VIII. Claims 17, 49, and 61 stand rejected under § 35 U.S.C. 103(a) as being unpatentable over White in view of Abineri and further in view of Plourde and further in view of Silberberg et al., (hereinafter "Silberberg", U.S. Patent Number 6957214).

IX. Claims 94-96 stand rejected under § 35 U.S.C. 103(a) as being unpatentable over White in view of Abineri and further in view of Plourde and further in view of Suver (U.S. Patent Number 6016497).

Grounds of Rejections Withdrawn

The following grounds of rejection are not presented to review on appeal because they have been withdrawn by the Examiner:

35 U.S.C § 101 rejection for claims 1-3, 5, 7-9, 11, 13, 15-37, 40-62, and 81-96.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6,609,132	White et.. al.,	8-2003
2005/0044079	Abineri et al.,	2-2005
2003/0110513	Plourde JR et al.,	6-2003
2002/0069240	Berk	6-2002
5,809,297	Kroenke et. al.,	9-1998
2003/0216169	Walker et al.,	11-2003
5,873,049	Bielak et. al.,	2-1999
2003/0076978	Eversole et. al.,	4-2003
5,812,840	Shwartz et. al.,	9-1998
6,957,214	Silberberg et. al.,	10-2005
6,016,497	Suver	1-2000

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 3, 7, 9, 11, 13, 15, 16, 53, 82-87, 89, and 92 are rejected under 35 U.S.C. 103(a) as being unpatentable over White et al. (hereinafter "White") (U.S. Patent Number 6609132) in view of Abineri et al. (hereinafter "Abineri") (U.S. Patent Application Publication Number 2005/0044079) and further in view of Plourde, JR et al., (hereinafter "Plourde") (U.S. Patent Application Publication Number 2003/0110513).

As per claim 1, White is directed to a data management system in a computing environment (Column 5 Lines 3-25) and teaches the limitations:

a) "a plurality of independent data structures having a common form, each of said data structures encapsulating a single data instance" (White, Column 6 Line 66 through Column 7 Line 11, i.e., *FIGS. 2 and 3 illustrates an exemplary embodiment of logical* ***data structures*** *representing the inventive object data model of the present invention, including a plurality of objects (****Object A, Object B, Object C and Object D*** *as shown) each having a plurality of attributes (as data members) for storing useful information that describes characteristics of the corresponding object. The attributes of a given object may be used* ***to encapsulate data and/or link to software functionality and/or processes pertinent to the given object****. As shown*

in FIG. 3, a Type Table Entry for a given object type includes one or more object identifiers (or pointers or keys) that identify the objects that belong to the given object type); and

b) "each of said data structures also encapsulating references to other of said data independent data structures encapsulating associated data instances" (White, Column 6 Line 66 through Column 7 Line 11, Column 7 Line 18-38, and Column 6 Line 23-43); and

"(c) wherein said plurality of data structures stored on a computer-readable media" (White Figure 1 and Column 4 Lines 47-55, i.e., *the various computational routines of the present invention are typically stored persistently in a storage device 11 (which may be a hard disk, drive, optical disk drive or other persistent storage means) that is operably coupled to memory 3*).

White does not explicitly teach the limitation: "in non tabular-form" and "wherein said data instances encapsulated in said data structures can be added, removed, and searched". Examiner interprets the limitation "in non-tabular form" in light of the specification that said data structures does not employ tables.

On the other hand, Abineri teaches the limitation:

"in non-tabular form" (Abineri, Paragraph 0061-0066). Abineri teaches parent classes and children with attributes, organizing data without using tables. Particularly note paragraph 0106 of Abineri, which states "*Although the inventory system has been described in terms of a telecommunications network environment, the modified*

tree approach has applications in other databases ***where flat file information*** *needs to be converted into* ***an object oriented database****. Also as mentioned above, more than one object identifier can be employed in construction of the database".*

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to add the feature of organizing data without using tables as taught by Abineri to the system of White so that the resultant system would comprise storing data structures in non-tabular form. One would have been motivated to do so in order to emphasize generic relations between data structures (Abineri, Paragraph 0061).

White in view of Abineri does not explicitly teach the limitation: "wherein said data instances encapsulated in said data structures can be added, removed, and searched".

On the other hand, Plourde teaches the limitation:

"wherein said data instances encapsulated in said data structures can be added, removed, and searched" (Plourde, Paragraph 0105, i.e., *data structures,* Paragraph 0105, i.e., *removed,* Paragraph 0105, i.e., *saved,* Paragraph 0105, i.e., *adds,* and Paragraph 0104, i.e., *searches*).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the system of White in view of Abineri to add the feature of adding, removing, and searching data structures, as taught by Plourde, to the system of White in view of Abineri so that the resultant system would comprise data instances encapsulated in data structures which can be added, removed, and searched.

One would have been motivated to do so in order to manipulate data structures employing mundane operations, which is notoriously well known in the art.

As per claim 3, White in view of Abineri and further in view of Plourde teaches the limitation:

" wherein a first data instance is encapsulated with references to associated data instances and each of said associated data instances are separately encapsulated with a reference to said first encapsulated data instance" (White, Column 6 Line 22-43 and Column 7 Line 18-38).

As per claim 7, White in view of Abineri and further in view of Plourde teaches the limitation:

"wherein said encapsulated references are in at least one dimensions; and each of said at least one dimensions corresponds to a type of association" (White, Column 7 Line 5-11).

As per claim 9, White in view of Abineri and further in view of Plourde teaches the limitation:

"wherein said common fundamental data structures are application independent and are generally the same for all of said data instances" (White, Column 7 Line 61 through Column 8 Line 3).

Claims 11, 13, 15, and 16 and 53 are rejected on the same basis as claim 9.

As per claim 82, White in view of Abineri and further in view of Plourde is directed to a method to convert a non-data instance centric database to a data instance centric database (Abineri, Paragraph 0106) and teaches the limitations:

"creating encapsulated data instances in said data instance centric database representing elements of said non-data-instance centric database schema and data elements of said non-data-instance centric database" (Abineri, Paragraphs 0049-0068); and

"creating associations amongst the said data instances in said data centric database representing the relationships between said data elements and said schema elements of the non-data-instance centric database and storing said association as a reference to each associated data instances stored within an independent data structure having a common form encapsulating the associated data instances, which are stored in not-tabular form on a computer-readable media" (Abineri, Paragraphs 0061 and 0067 in view of White Figure 1 and Column 4 Lines 47-55).

As per claim 83, Abineri is directed to the method of claim 82 wherein said converting is through a software agent. The whole system of Abineri is a software agent.

As per claim 84, Abineri is directed to the limitation:

" wherein said non-data instance centric database includes a flat file" (Paragraph 0106).

Claims 85-87 are rejected on the same basis as claim 1.

As per claim 89, White in view of Abineri and further in view of Plourde teaches the limitation:

"wherein said references to associated items are arranged in sets defining the type of association between said item and each of said other items referenced in said set" (White, Figure 3 and Column 7 Line 44-61 "Relation Type Table Entry").

As per claim 92, White in view of Abineri and further in view of Plourde teaches the limitation:

"wherein said items may act as containers for one more member items" (White, Column 6 Line 66 through Column 7 Line 11, Column 7 Line18-38, and Column 6 Line 23-43).

3. Claims 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over White in view Abineri and further in view of Plourde and further in view of and further of Berk (U.S. Patent Application Number 2002/0069240).

As per claim 2, White in view of Abineri and further in view of Plourde as applied to claim 1 teaches the limitation: "within a multi-dimensional organization of said data structures" (White, Column 6 Line 66 through Column 7 Line 11, Column 7 Line 18-38, and Column 6 Line 23-43).

White in view of Abineri and further in view of Plourde does not explicitly teach the limitation: "a reference indicating the location of itself".

On the other hand, Berk teaches the limitation:

"a reference indicating the location of itself" (Berk, Paragraph 0025, i.e., *In an alternate embodiment,* ***the file location pointer itself specifies the location of a computer file stored in a local memory*** *resident in the client computer*).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the system of White in view of Abineri and further in view of Plourde to add the feature of having a data item referencing its own location, as taught by Berk, to the system of White in view of Abineri and further in view of Plourde so that, in the resultant method, independent data structures would encapsulate a reference indicating the location of itself. One would have been motivated to so in order to facilitate retrieval of said data structures, which is a well know practice in the art. Self-pointers of data items are commonly employed to facilitate data retrieval in the field of computer software.

4. Claims 5, 8, 18-24, 31-34, 36, 47-48, 50-52, 54-60, 62, 88, 90, and 93 are rejected under 35 U.S.C. 103(a) as being unpatentable over White et al. in view Abineri and further in view of Plourde and further of Kroenke et al. (hereinafter "Kroenke")(U.S. Patent Number 5809297).

Referring to claim 5, White in view of Abineri and further in view of Plourde teaches the limitations:

" wherein a first data instance is encapsulated with references to associated data instances and each of said associated data instances are separately encapsulated with a reference to said first encapsulated data instance on said computer-readable media;"

"wherein each of said encapsulated references is a logical index which uniquely identifies each of said associated encapsulated data instances and also encodes the location ("pointers or keys") of each of said associated encapsulated data instances" (White et al., "pointers or keys", Column 7 Line 5-11).

White in view of Abineri does not explicitly teach the limitation: "wherein said logical index is 'm' dimensional, and has 'n' bits per dimension".

On the other hand, Kroenke teaches the limitation:

"wherein said logical index is 'm' dimensional, and has 'n' bits per dimension" (Kroenke, Figure 2, Column 6 Line 26-65, and Column 14 Line 4-17). Kroenke teaches an object data model for semantic relationships wherein such logical indexes (attributes) "m" dimensional (Kroenke et al., Figure 2 and Column 6 Line 26-65) and has "n" bits per dimension (Kroenke et al., "length", Column 14 Line 4-17)).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the system of White in view of Abineri and further in view of Plourde to add the feature of employing logical indexes, dimensions and bits for creating attributes for a semantic object, as taught by Kroenke, to the system and method taught by White in view of Abineri and further in view of Plourde as applied to

claim 1 above so that the combined system would comprise logical indexes which are "m" dimensional and has "n" bits per dimension. One would have been motivated to do so in order to obtain "a system that allows a user to create a relational database schema in a way that does not require the user to be familiar with the underlying database technology or rules for defining a database", thereby enabling the user "to define the data to be stored in a way that mirrors the user's view of the data" (Kroenke et al., Column 2 Line 9-16).

Referring to claim 8, White in view of Abineri and further in view of Plourde and further in view of Kroenke teaches the limitation:

"wherein each of said at least one dimensions has a plurality of said encapsulated references" (White, Column 7 Lines 5-11, Column 7 Lines 45-52 and Kroenke, Column 6 Line 26-65).

Referring to claim 18, White in view of Abineri and further in view of Plourde and further in view of Kroenke teaches the limitation:

"wherein said encapsulated references of at least one of the encapsulated data instances are unique and said encapsulated references of at least two of the encapsulated data instances are generally identical" (Kroenke, Figure 2, Column 6 Line 26-65, and Column 14 Line 4-17).

As per claim 19, White in view of Abineri and further in view of Plourde and further in view of Kroenke teaches the limitation:

"wherein including a plurality of pre-existing encapsulated data instances, having established associations, wherein at least one new encapsulated data instance is associated with at least one of said pre-existing encapsulated data instances" (White, Column 5 Line 3-32).

White in view of Kroenke teaches an object database model (White et al., Column 5 Line 5), which comprises one or more objects (items) and relations that characterize the semantics of the relationships between them (White et al., Column 5 Line 5-10). Being an object database model, said objects encapsulate semantic attributes (semantic relations between/among the objects) along with other attributes. Said objects can be created or destroyed repeatedly. Therefore, said objects (encapsulated data instances) can pre-exist and more such objects can be created at will, establishing relationships between/among those pre-existing and new objects.

As per Claim 20, White in view of Abineri and further in view of Plourde and further in view of Kroenke teaches the limitation:

"wherein including a plurality of pre-existing encapsulated data instances, having established associations, wherein any of said preexisting encapsulated data instances can be removed disassociated from other pre-existing associated encapsulated data instances can be removed and disassociated fro other per-existing associated encapsulated data instances" (White, Column 5 Line 5-10). White teaches

an object database model (White, Column 5 Line 5), which comprises one or more objects (items) and relations that characterize the semantics of the relationships between them (White, Column 5 Line 5-10). Being an object database model, said objects can be removed/dissociated from any other objects (pre-existing or otherwise).

Claim 21 is rejected on the same basis as claim 19. White teaches an object database model (White, Column 5 Line 5), which comprises one or more objects (items) and relations that characterize the semantics of the relationships between them (White, Column 5 Line 5-10). Being an object database model, attributes of the objects can be arbitrarily changed. In other words, new associations between objects (pre-existing or otherwise) can be added.

Claim 22 is rejected on the same basis as claim 19. White teaches an object database model (White, Column 5 Line 5), which comprises one or more objects (items) and relations that characterize the semantics of the relationships between them (White, Column 5 Line 5-10). Being an object database model, attributes of the objects can be arbitrarily changed. In other words, associations between objects (pre-existing or otherwise) can be removed.

Referring to claim 23, White in view of Abineri and further in view of Plourde and further in view of Kroenke teaches the limitations:

"a search capability for finding specific unknown encapsulated data instances from a selection criteria of known encapsulated data instances by accessing said known encapsulated data instances representing said selection criteria" (White Column 23 Lines 42-50 and Kroenke Column 12 Lines 15-44) "comprising the steps of":

"accessing references encapsulated with said known encapsulated data instances representing said selection criteria" (White Column 23 Lines 42-50 and Kroenke Column 12 Lines 15-44);

"using Boolean operations to compare said accessed encapsulated references to find references to said specific unknown encapsulated data instances" (White Column 23 Line 42-50 and Kroenke Column 12 Line 15-44); and

"retrieving said specific unknown encapsulated data instances" (White Column 23 Line 42-50 and Kroenke Column 12 Line 15-44).

Referring to claim 24, White in view of Abineri and further in view of Plourde and further in view of Kroenke teaches the limitations:

"said encapsulated references are embodied as logical indexes in a plurality of dimensions" (White, *pointers or keys* in Column 7 Line 5-11), "each of said dimensions corresponding to a type of association" (White Column 5 Line 3-25 and Column 6 Line 22-43), wherein said accessing further comprises accessing said encapsulated references from said dimensions specified in said selection criteria" (White Column 23 Line 42-50 and Kroenke Column 12 Line 15-44).

Referring to claim 31, White in view of Abineri and further in view of Plourde and further in view of Kroenke teaches the limitation:

"wherein said encapsulated data instances have attributes of a user interface" (White, Column 5 Line 30-32 and Column 10 Line 12-60).

Referring to claim 32, White in view of Abineri and further in view of Plourde and further in view of Kroenke teaches the limitation:

"wherein said attributes of a user interface are selected from a group of user views, display elements, and data access methods" (White, Column 5 Line 30-32 and Column 10 Line 12-60).

Referring to claim 33, White in view of Abineri and further in view of Plourde and further in view of Kroenke teaches the limitation:

"further comprising searching said system wherein the encapsulated references of two or more different encapsulated data instances are used to derive desired results" (White Column 23 Lines 42-50 and Kroenke Column 12 Lines 15-44).

Referring to claim 34, White in view of Abineri and further in view of Plourde and further in view of Kroenke teaches the limitation:

"wherein said encapsulated references of two or more different encapsulated data instances are compared for at least one of commonality, similarity and difference to derive sets of references corresponding to said desired results" (White Column 23 Lines 42-50 and Kroenke Column 12 Lines 15-44).

Referring to claim 36, White in view of Abineri and further in view of Plourde and further in view of Kroenke teaches the limitations:

"a first data instance is encapsulated with references to associated data instances and each of said associated data instances are separately encapsulated with a reference to said first encapsulated data instance" (White Column 6 Line 66 through Column 7 Line 11, Column 7 Line 18-38, and Column 6 Line 23-43);

"wherein each of said encapsulated references is a logical index which uniquely identifies each of said associated encapsulated data instances and also encodes the location of each of said associated encapsulated data instances on said computer readable media" (White, *pointers or keys*, Column 7 Line 5-11); and

"wherein said logical index is `m` dimensional, and has `n` bits per dimension" (Kroenke, *length*, Column 14 Line 4-17);

"the encapsulated references of two or more different encapsulated data instances compared such for at least one of commonality, similarity and difference to derive sets of references corresponding to said desired results" (White Column 23 Line 42-50 and Kroenke Column 12 Line 15-44).

Claim 47 is rejected on the same basis as claim 23.

Claim 48 is rejected on the same basis as claim 33.

Referring to claim 50, White in view of Abineri and further in view of Plourde and further in view of Kroenke teaches the limitation:

"wherein said encapsulated references of at least one of said encapsulated data instances is unique and said encapsulated references of at least two of said encapsulated data instance are generally identical" (White Column 23 Lines 42-50 and Kroenke Column 12 Lines 15-44).

Referring to claim 51, White in view of Abineri and further in view of Plourde and further in view of Kroenke teaches the limitations:

"said encapsulated references of at least one of said encapsulated data instances is unique and said encapsulated references of at least two of said encapsulated data instance are generally identical" (Kroenke, Figure 2, Column 6 Line 26-65, and Column 14 Line 4-17); and

"searching said system wherein said encapsulated references of different said encapsulated data instances are used to derive desired results" (White Column 23 Line 42-50 and Kroenke et al., Column 12 Line 15-44).

Claim 52 is rejected on the same basis as claim 5. Claim 5 incorporates all the limitations of claim 1.

Claim 54 is rejected on the same basis as claim 23.

Claim 55 is rejected on the same basis as claim 34.

Claim 56 is rejected on the same basis as claim 17.

Claim 57 is rejected on the same basis as claim 18.

Claim 58 is rejected on the same basis as claim 34. Claim 34 incorporates the limitations of claim 33.

Claim 59 is rejected on the same basis as claim 23.

Claim 60 is rejected on the same basis as claim 33.

Claim 62 is rejected on the same basis as claim 18.

As per claim 88, White in view of Abineri and further in view of Plourde and further in view of Kroenke teaches the limitations:

"wherein said unique reference also serves as an index to physically locate said data instance associated with each of items on said computer-readable media" (White et al., "pointers or keys", Column 7 Line 5-11).

Claim 90 is rejected on the same basis claim 5.

As per claim 93, White in view of Abineri and further in view of Plourde and further in view of Kroenke teaches the limitations:

"wherein the membership of an item within a container item is indicated by an identity in one or more said "m" dimensions in said logical index of said container item

and each of said member items" (White, *Type Table Entry* in Column 7 Lines 8-10, Column 5 Lines 48 through Column 6 Line 21, and Column 7 Lines 18-38).

5. Claim 27-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over White in view of Abineri and further in view of Plourde and further in view of Kroenke and further in view of Walker et al. (hereinafter "Walker") (U.S. Patent Application Publication Number 2003/0216169).

Referring to claim 27, White in view of Abineri and further in view of Plourde and further in view of Kroenke does not explicitly disclose the limitation:

"said Boolean operations further comprise: basic mathematical operators which result in the direct exclusion of at least one encapsulated reference from the result of said comparing in a single operation".

Walker teaches the limitation:

"said Boolean operations further comprise: basic mathematical operators which result in the direct exclusion of at least one encapsulated reference from the result of said comparing in a single operation" (Walker, Paragraphs 0045-0046).

At the time the invention was made, it would have obvious to a person of ordinary skill in the art to add the feature of combining Boolean operations with basic mathematical operations as taught by Walker to the system taught by White in view of Abineri and further in view of Plourde and further in view of Kroenke et al. as applied to claim 23 so that, in the resultant method, Boolean operations would further comprise basic mathematical operators which result in the direct exclusion of at least one

encapsulated reference from the result of said comparing in a single operation. One would have been motivated to do so simply to reduce execution time.

Claim 28-30 is rejected on the same basis as claim 27.

6. Claim 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over White in view of Abineri and further in view of Plourde and further in view Bielak et al. (hereinafter "Bielak") (U.S. Patent Number 5873049).

Referring to claim 40, White in view of Abineri and further in view of Plourde as applied to claim 1 does not explicitly disclose the limitation:

"(a plurality of encapsulated data instances representing) ASCII characters";

"(said common fundamental data structures containing said encapsulated data instances) representing ASCII characters also (containing encapsulated references to encapsulated data instances) using one or more of said ASCII characters;" and

"(said common fundamental data structures containing encapsulated data instances) using one or more said ASCII characters also (containing encapsulated references to said encapsulated data instances) representing said used ASCII characters".

Bielak teaches the limitations:

"(a plurality of encapsulated data instances) representing ASCII characters";

"(said common fundamental data structures containing said encapsulated data instances) representing ASCII characters also (containing encapsulated references to encapsulated data instances) using one or more of said ASCII characters;" and

"(said common fundamental data structures containing encapsulated data instances) using one or more said ASCII characters also (containing encapsulated references to said encapsulated data instances) representing said used ASCII characters" (Bielak, Column 12 Line 64 through Column 13 Line 12). Bielak et al. teaches a system and method for persistent databases, wherein ASCII characters are encapsulated in data objects (Column 12 Line 64 through Column 13 Line 12).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the feature of encapsulating ASCII characters in data objects as taught by Bielak with the system of White in view of Abineri and further in view of Plourde as applied to claim 1 so that the combined system further comprise encapsulated data instances representing ASCII characters, wherein common fundamental data structures containing said encapsulated data instances representing ASCII characters also contain encapsulated references to encapsulated data instances containing said corresponding ASCII characters, and said common fundamental data structures containing said encapsulated data instances containing said corresponding ASCII characters also contains encapsulated references to said encapsulated data instances representing corresponding ASCII characters. One would have been motivated to do so simply because object-oriented model could encapsulate any kind of data, including ASCII characters which are more human-readable than other data types.

7. Claim 42 is rejected under 35 U.S.C. 103(a) as being unpatentable over White in view of Abineri and further in view of Plourde and further in view Eversole et al. (hereinafter "Eversole")(U.S. Patent Application Publication Number 2003/0076978).

Referring to claim 42, White in view of Abineri and further in view of Plourde does not explicitly disclose the limitations:

"a plurality of encapsulated data instances representing Unicode Characters";

"said common fundamental data structures containing said encapsulated data instances representing Unicode characters also containing encapsulated references to encapsulated data instances using one or more said corresponding Unicode characters;" and

"said common fundamental data structures encapsulated data instances using one or more of said Unicode characters also contains encapsulated references to said data instances representing said used Unicode characters".

Eversole teaches the limitations:

"a plurality of encapsulated data instances representing Unicode Characters";

"said common fundamental data structures containing said encapsulated data instances representing Unicode characters also containing encapsulated references to encapsulated data instances using one or more said corresponding Unicode characters;" and

"said common fundamental data structures encapsulated data instances using one or more of said Unicode characters also contains encapsulated references to said data instances representing said used Unicode characters" (Eversole, Paragraph

0043). Eversole et al. teaches a method for extensible file format, wherein Unicode characters are encapsulated in data objects (Eversole et al., Paragraph 0043).

At the time the invention was made, it would have been obvious to a person ordinary skill in the art to combine the feature of encapsulating Unicode characters in data objects as taught by Eversole et al. with the system of White in view of Abineri and further in view of Plourde as applied to claim 1 so that the combined system further comprise encapsulated data instances representing Unicode characters, common fundamental data structures containing said encapsulated data instances representing Unicode characters also contain encapsulated references to encapsulated data instances containing said corresponding Unicode characters, and said common fundamental data structures containing said encapsulated data instances representing Unicode characters also contains encapsulated references to said data instances representing corresponding Unicode characters. One would have been motivated to do so object-oriented model could encapsulate any kind of data, including Unicode characters which are more human-readable than other data types.

8. Claim 44 is rejected under 35 U.S.C. 103(a) as being unpatentable over White in view of Abineri and further in view of Plourde and further in view Shwartz et al. (hereinafter “Shwartz”) (U.S. Patent Number 5812840).

Referring to claim 44, White in view of Abineri and further in view of Plourde as applied to claim 1 does not explicitly teach the limitations:

"a plurality of encapsulated data instances representing the tokens of a token set of any data type;"

"said common fundamental data structures containing said data instances representing said tokens also containing encapsulated references to encapsulated data instances using one or more of said tokens" and

"said common fundamental data structures containing encapsulated data instances using one or more of said tokens also containing encapsulated references to said encapsulated data instances representing said used tokens" .

Shwartz teaches the limitations:

"a plurality of encapsulated data instances representing the tokens of a token set of any data type;"

"said common fundamental data structures containing said data instances representing said tokens also containing encapsulated references to encapsulated data instances using one or more of said tokens;" and

"said common fundamental data structures containing encapsulated data instances using one or more of said tokens also containing encapsulated references to said encapsulated data instances representing said used tokens" (Column 22 Lines 13-16) . Shwartz et al. teaches a method and system for database query, wherein a set of encapsulated variables are included in an object data structure ("a blackboard").

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the feature of encapsulating token set of any data type in data objects as taught by Shwartz et al. with the system of White in view of

Abineri and further in view of Plourde as applied to claim 1 so that the combined system further comprise encapsulated data instances representing a token set of any data type. One would have been motivated to do so simply because object-oriented model could encapsulate any kind of data.

9. Claim 17, 49, and 61 are rejected under 35 U.S.C. 103(a) as being unpatentable over White in view of Abineri and further in view of Plourde and further in view of Silberberg et al. (hereinafter "Silberberg") (U.S. Patent Number 6957214).

Referring to claim 17, White in view of Abineri and further in view of Plourde does not explicitly teach the limitation:

"wherein at least one of said encapsulated references is a reference to an encapsulated data instance in another computing environment."

Silberberg teaches the limitation:

""wherein at least one of said encapsulated references is a reference to an encapsulated data instance in another computing environment" (Column 5 Line 48 through Column 6 Line 54). Silberberg et al. discloses architecture for distributed database information access wherein data instances are located in different computing environments (Column 5 Line 48 through Column 6 Line 54).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the feature for accessing data instances in different computing environments as taught by Silberberg et al. with the system taught by White in view of Abineri and further in view of Plourde applied to claim 1 above so that, in the

combined system, at least one of said encapsulated references is a reference to an encapsulated data instance in another computing environment. One would have been motivated to do so in order to access "information from a plurality of diverse data sources" (Silberberg et al., Column 4 Line 7-9).

Claim 49 and 61 are rejected on the same basis as claim 17.

10. Claims 94-96 are rejected under 35 U.S.C. 103(a) as being unpatentable over White in view of Abineri and further in view of Plourde and further in view of Suver (U.S. Patent Number 6016497).

Referring claim 94, White in view of Abineri and further in view of Plourde does not explicitly teach that the limitation:

"wherein each of said items may encapsulate embedded elements."

Suver teaches the limitation: "wherein each of said items may encapsulate embedded elements" (Column 10 Line 9-27). Suver teaches a method and system for storing and accessing embedded information in object-relational databases wherein data instances encapsulate embedded elements (Column 10 Line 9-27).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the feature of embedding elements in object-relational databases as taught by Suver with the system and method of claim 85 as taught by White in view of Abineri and further in view of Plourde so that, in the combined system and method, items would encapsulate embedded elements. One

would have been motivated to do so in order to "allow for storing and access of embedded complex information in both the relational data modeling and object-oriented data modeling" (Suver, Column 2 Line 44-48).

Referring to claim 95, Suver teaches the limitation:

"wherein said embedded elements are references to other items" (Column 10 Line 9-27).

Referring to claim 96, Suver teaches the limitation:

"wherein said data instances my contain data of any type" (Column 10 Line 9-27).

(10) Response to Arguments .

Referring to the rejection of claims 1, 3, 7, 9, 11, 13, 15, 16, 53, 82-87, 89 and 92 under 35 U.S.C. § 103 (a), Applicant has argued that "*the Applicants respectfully submits that the application of White is not proper in this instance because White teaches away form the invention that White requires that its data items and information relating to the relationships between data items be stored in separate places, typically in separate relational database tables"* (Appellant's argument, page 6, 3rd paragraph). In connection with this argument, Appellant also stated that *"No disclosure is made in White of the storage of relationship information as embedded in formation in the same*

storage structure in which the data items itself is stored" (Appellant's argument, page 8, first paragraph).

Examiner respectfully disagrees all of the allegations as argued. Examiner, in his previous office action, gave detail explanation of claimed limitation and pointed out exact locations in the cited prior art. Examiner is entitled to give claim limitations their broadest reasonable interpretation in light of the specification. See MPEP 2111 [R-1] Interpretation of Claims-Broadest Reasonable Interpretation.

During patent examination, the pending claims must be 'given the broadest reasonable interpretation consistent with the specification.' Applicant always has the opportunity to amend the claims during prosecution and broad interpretation by the examiner reduces the possibility that the claim, once issued, will be interpreted more broadly than is justified. In re Prater, 162 USPQ 541,550-51 (CCPA 1969).

In response it is pointed out that White teaches the limitation: "**a plurality of independent data structures having a common form, each of said data structures encapsulating a single data instance**" (White, Column 6 Line 66 through Column 7 Line 11, i.e., *FIGS. 2 and 3 illustrates an exemplary embodiment of logical* ***data structures*** *representing the inventive object data model of the present invention, including a plurality of objects (****Object A, Object B, Object C and Object D*** *as shown) each having a plurality of attributes (as data members) for storing useful information that describes characteristics of the corresponding object. The attributes of a given object may be used* ***to encapsulate data and/or link to software functionality and/or processes pertinent to the given object****. As shown in FIG. 3, a Type Table Entry for a*

given object type includes one or more object identifiers (or pointers or keys) that identify the objects that belong to the given object type) and Abineri teaches parent classes and children with attributes, organizing data without using tables (Abineri, paragraph 0060-0066). Particularly note paragraph 0106 of Abineri, which states "*Although the inventory system has been described in terms of a telecommunications network environment, the modified tree approach has applications in other databases* ***where flat file information*** *needs to be converted into* ***an object oriented database***. *Also as mentioned above, more than one object identifier can be employed in construction of the database"*. As such, White in view of Abineri teaches a plurality of independent data structures having a common form, each of said data structures encapsulating a single stance and each of said data structures also encapsulating references to other of said independent data structures encapsulating associated data instances, wherein said plurality of data structures are in non-tabular form.

As per Appellant's argument that "*No disclosure is made in White of the storage of relationship information as embedded in formation in the same storage structure in which the data items itself is stored"* (Appellant's argument, page 8, first paragraph) it is noted that the features upon which applicant relies (i.e. *the storage of relationship information as embedded in formation in the same storage structure in which the data items itself is stored*) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Appellant also argued that "*Abineri never actually discusses the structure of the*

original flat file database nor does he discuss the implementation of the object oriented database, which can be implemented in any manner well known in the art, including a tabular form as described in White. Because there is no specific teaching of a database in non-tabular form in Abineri, the Appellant respectfully submits that this limitation of the claim is not taught by the combination of White and Abineri" (Appellant's argument, page 9 second paragraph).

In response, Examiner repeats the point made above as follows: White teaches the limitation: "**a plurality of independent data structures having a common form, each of said data structures encapsulating a single data instance**" (White, Column 6 Line 66 through Column 7 Line 11, i.e., *FIGS. 2 and 3 illustrates an exemplary embodiment of logical* ***data structures*** *representing the inventive object data model of the present invention, including a plurality of objects (****Object A, Object B, Object C and Object D*** *as shown) each having a plurality of attributes (as data members) for storing useful information that describes characteristics of the corresponding object. The attributes of a given object may be used* ***to encapsulate data and/or link to software functionality and/or processes pertinent to the given object****. As shown in FIG. 3, a Type Table Entry for a given object type includes one or more object identifiers (or pointers or keys) that identify the objects that belong to the given object type*) and Abineri teaches parent classes and children with attributes, organizing data without using tables (Abineri, paragraph 0060-0066). Particularly note paragraph 0106 of Abineri, which states "*Although the inventory system has been described in terms of a telecommunications network environment, the modified tree approach has applications*

in other databases ***where flat file information*** *needs to be converted into* ***an object oriented database***. *Also as mentioned above, more than one object identifier can be employed in construction of the database".* As such, White in view of Abineri teaches a plurality of independent data structures having a common form, each of said data structures encapsulating a single stance and each of said data structures also encapsulating references to other of said independent data structures encapsulating associated data instances, wherein said plurality of data structures are in non-tabular form.

Referring to claims 82-87, Appellant argued that "with respect to claims 82-87, the Appellant respectfully submits that neither White, Abineri or Plourde teaches a system in which all associations between a given data item and other data items may be encapsulated within the same data structure in which the data item is stored" (Appellant's argument, page 10 third paragraph).

In response, it is pointed out that White in view of Abineri teaches the limitation in question as follows:" *creating associations amongst the said data instances in said data centric database representing the relationships between said data elements and said schema elements of the non-data-instance centric database and storing said association as a reference to each associated data instances stored within an independent data structure having a common form encapsulating the associated data instances, which are stored in not-tabular form on a computer-readable media*" (Abineri, Paragraphs 0061 and 0067 in view of White Figure 1 and Column 4 Lines 47-55).

Referring to claims 5, 8, 18-24, 31-34, 36, 47-48, 50-52, 54-60, 62, 88, 90 and

93, Appellant argued that *"However, this is not disclosed in the cited passage in Kroenke, which describes a subscript for an attribute consisting of a pair of integers having the form "m.n", where "m" refers to the minimum cardinality and "n" refers to the maximum cardinality of the attribute"* (Appellant's argument, page 11).

In response, Kroenke teaches the limitation in question: "*wherein said logical index is 'm' dimensional, and has 'n' bits per dimension*" (Kroenke, Figure 2, Column 6 Line 26-65, and Column 14 Line 4-17). Kroenke teaches an object data model for semantic relationships wherein such logical indexes (attributes) are of "m" dimensional (Kroenke et al., Figure 2 and Column 6 Line 26-65) and has "n" bits per dimension (Kroenke et al., "length", Column 14 Line 4-17)). This response also applies to Appellant's argument regarding claim 8 which states that "*Nothing in this portion of Kroenke or anywhere in Kroenke is taught a multi-dimensional index wherein each dimension of the index is related to a plurality of encapsulated references"* (Appellant's argument, page 12). Note that the claims in question are rendered obvious over the combination of White in view of Abineri and further in view of Plourde and further in view of Kroenke. As such, it is pointed out that, in the said combination, "a plurality of encapsulated references" is taught by White as applied to the independent claims.

Referring to claim 24, Appellant argued that *"Neither White nor Kroenke disclose a database management system in which the grouping of encapsulated references corresponds to the type of association present between the grouped references and the encapsulating data instance"* (Appellant's argument, page 13, 2nd paragraph).

In response, it is pointed out that White in view of Abineri and further in view of Plourde teaches the limitation: "wherein said encapsulated references are in at least one dimensions; and each of said at least one dimensions corresponds to a type of association" (White, Column 7 Line 5-11, i.e., *The attributes of a given object may be used to encapsulate data and/or link to software functionality and/or processes pertinent to the given object. As shown in FIG. 3, a Type Table Entry for a given object type includes one or more object identifiers (or pointers or keys) that identify the objects that belong to the given object type*).

Referring to claim 36, Appellant argued that *"Neither White nor teach this limitation"* (Appellant's argument, page 13, third paragraph).

In response, it is pointed out that , White in view of Abineri and further in view of Plourde and further in view of Kroenke teaches the limitations in question as follows: "a first data instance is encapsulated with references to associated data instances and each of said associated data instances are separately encapsulated with a reference to said first encapsulated data instance" (White Column 6 Line 66 through Column 7 Line 11, Column 7 Line 18-38, and Column 6 Line 23-43); "wherein each of said encapsulated references is a logical index which uniquely identifies each of said associated encapsulated data instances and also encodes the location of each of said associated encapsulated data instances on said computer readable media" (White, ***pointers or keys***, Column 7 Line 5-11); and "wherein said logical index is `m` dimensional, and has `n` bits per dimension" (Kroenke, *length*, Column 14 Line 4-17); "the encapsulated references of two or more different encapsulated data instances

compared such for at least one of commonality, similarity and difference to derive sets of references corresponding to said desired results" (White Column 23 Line 42-50 and Kroenke Column 12 Line 15-44).

Referring to claim 23, Appellant argued that *"White does not teach a multidimensional index and , therefore, cannot teach that an identity in one of the dimensions indicates membership in a container item. White, in fact, does not appear to discuss container items. The cited portion of White does not refer to membership in a container or, or that matter, any type of relation between any items in the database"* (Appellant's argument, page 14 first paragraph).

In response, it is pointed out that, in the combination, teaches the claimed limitations as follows: "a search capability for finding specific unknown encapsulated data instances from a selection criteria of known encapsulated data instances by accessing said known encapsulated data instances representing said selection criteria" (White Column 23 Lines 42-50 and Kroenke Column 12 Lines 15-44) "comprising the steps of": "accessing references encapsulated with said known encapsulated data instances representing said selection criteria" (White Column 23 Lines 42-50 and Kroenke Column 12 Lines 15-44); "using Boolean operations to compare said accessed encapsulated references to find references to said specific unknown encapsulated data instances" (White Column 23 Line 42-50 and Kroenke Column 12 Line 15-44); and "retrieving said specific unknown encapsulated data instances" (White Column 23 Line 42-50 and Kroenke Column 12 Line 15-44). As per Appellant's reference to "membership in a container item" and the like, it is pointed out that the features upon

which applicant relies on but are not recited in the rejected claim(s) are not read into the claim. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Referring to claims 27-30, Appellant argued that *"however, within the context of the database system presented in the parent claims of claims 27-30, the use of Boolean mathematical operations to sort through lists of encapsulated data instances for purposes satisfying search criteria is not disclosed in the cited references"* (Appellant's argument, page 14 second paragraph).

In response, it is pointed that White in view of Abineri teaches the system of the parent claims and, as such, Boolean operations of Walker are applicable to the system of White in view of Abineri. At the time the invention was made, it would have obvious to a person of ordinary skill in the art to add the feature of combining Boolean operations with basic mathematical operations as taught by Walker to the system taught by White in view of Abineri and further in view of Plourde and further in view of Kroenke et al. as applied to claim 23 so that, in the resultant method, Boolean operations would further comprise basic mathematical operators which result in the direct exclusion of at least one encapsulated reference from the result of said comparing in a single operation. One would have been motivated to do so simply to reduce execution time.

Referring to claim 40, Appellant argued that *"This portion of Bielak merely teaches that data may be stored in ASCII format. The use of the term "ASCII" in this format does not indicate that the claimed limitations are disclosed in that reference. Bielak does not*

come close to teaching that the individual ASCII characters may be stored as individual data items in a database and be referred to by other data items which require the sue of that particular ASCII character. The same argument applies for claim 42 regarding Unicode characters for which the Examiner cited Eversol, and claim 44 wherein data instances are representing the token members of the random token set of any data type for which the Examiner has cited Schwartz" (Appellant's argument, page 14 last paragraph through page 15 first paragraph).

In response, it is pointed out that White in view of Abineri and further in view of Bielak teaches the limitations in question as follows: "a plurality of encapsulated data instances (White in view of Abineri) representing ASCII characters" (Bielak, Column 12 Line 64 through Column 13 Line 12); "said common fundamental data structures containing said encapsulated data instances (White in view of Abineri) representing ASCII characters (Bielak, Column 12 Line 64 through Column 13 Line 12) also containing encapsulated references to encapsulated data instances (White in view of Abineri) using one or more of said ASCII characters (Bielak, Column 12 Line 64 through Column 13 Line 12);" and "said common fundamental data structures containing encapsulated data instances (White in view of Abineri) using one or more said ASCII characters (Bielak, Column 12 Line 64 through Column 13 Line 12) also containing encapsulated references to said encapsulated data instances (White in view of Abineri) representing said used ASCII characters" (Bielak, Column 12 Line 64 through Column 13 Line 12). Bielak et al. teaches a system and method for persistent databases, wherein ASCII characters are encapsulated in data objects (Column 12 Line

64 through Column 13 Line 12). The point is that it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the teachings of said references. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the feature of encapsulating ASCII characters in data objects as taught by Bielak with the system of White in view of Abineri and further in view of Plourde as applied to claim 1 so that the combined system further comprise encapsulated data instances representing ASCII characters, wherein common fundamental data structures containing said encapsulated data instances representing ASCII characters also contain encapsulated references to encapsulated data instances containing said corresponding ASCII characters, and said common fundamental data structures containing said encapsulated data instances containing said corresponding ASCII characters also contains encapsulated references to said encapsulated data instances representing corresponding ASCII characters. One would have been motivated to do so simply because object-oriented model could encapsulate any kind of data, including ASCII characters which are more human-readable than other data types.

Referring to claims 17, 49, and 61, Appellant argument argued that *Silberberg teaches a specific architecture for accessing the information stored in other environments which is different than the architecture described in the present application*s (Appellant's argument, page 15 second paragraph). In response, it is pointed out that White in view of Abineri teaches one architecture which could reference information in another architecture which is taught by Silberberg.

Referring to claims 94-96, Appellant argued that *the Applicant respectfully submits that there is no teaching, suggestion or motivation for citing Suver with respect to the present application* (Appellant's argument, page 16).

In response, it is pointed out that White in view of Abineri and further in view of Plourde and further in view of Suver teaches the limitations of claims 94-96 as discussed in prior and current office actions. For instances, White in view of Abineri and further in view of Plourde and further in view of Suver teaches the limitations of claim 94 as follows: "wherein each of said items may encapsulate embedded elements." Suver teaches the limitation: "wherein each of said items may encapsulate embedded elements" (Column 10 Line 9-27). Suver teaches a method and system for storing and accessing embedded information in object-relational databases wherein data instances encapsulate embedded elements (Column 10 Line 9-27). In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, one would have been motivated to do so in order to "allow for storing and access of embedded complex information in both the relational data modeling and object-oriented data modeling" (Suver, Column 2 Line 44-48).

In conclusion, it is respectfully submitted that rejections of the claims should be maintained in light of the pertinent guidance from MPEP and the respective prior art.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the Examiner in the Related Appeals and Interferences section of this examiner's answer.

Respectfully Submitted,

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